

The seal of the State of South Dakota is a circular emblem. It features a central landscape with a river, a windmill, and a farm. Above the landscape is a banner that reads "UNDER GOD THE PEOPLE RULE". The outer ring of the seal contains the text "STATE OF SOUTH DAKOTA" at the top and "GREAT SEAL" at the bottom, separated by two stars. At the very bottom of the seal, the year "1889" is inscribed within a decorative border.

# **STATEMENT OF BASIS**

## **Air Quality Construction Permit**

**Kolberg-Pioneer, Inc.**

**Yankton, South Dakota**

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## **1.0 BACKGROUND**

On February 22, 1999, Kolberg-Pioneer Inc. (Kolberg) was issued a Title V air quality permit #28.9906-07 for the operation of three paint spray booths and one air make-up unit at its manufacturing facility located in Yankton, South Dakota.

The permit was modified in May 2001 to include an additional paint spray booth (Unit #5). The modified permit placed an emission limit and record keeping requirements for hazardous air pollutants on the additional booth, exempting Unit #5 from a case-by-case MACT determination.

The permit was modified and renewed in March 2006 to include the installation of two additional paint booths and associated air make-up units.

On December 22, 2009, Kolberg submitted an application to modify its existing permit to include other processes generating particulate matter that were not previously identified in its permit. These processes include two plasma arc cutting tables, welding hoods, shotblast system and a plasma punch.

On March 22, 2010, the department received an application from Kolberg to modify their permit again by installing a heat treating “Stress Relief” furnace vented outdoors.

On July 6, 2011, Kolberg submitted an application to construct a powder coating system. The application was considered complete on July 13, 2011. It was determined by DENR that the powder coating system did not require Kolberg to obtain a construction permit.

On January 27 and February 9, 2012, Kolberg submitted applications to install a 2012 Alltra/Hypertherm plasma burn table with particulate emissions controlled by a 2011 Donaldson Torit baghouse and a Hastings 4.7 million Btu per hour air makeup unit fired with natural gas. Kolberg would also decommission the currently permitted Small Parts Paint Booth (Unit # 3). The applications were considered complete on February 27, 2012 and a construction permit was issued on April 23, 2012.

On April 18, 2011, Kolberg submitted an application to renew its existing permit. The permit was considered complete on May 23, 2011 and a renewal issued on March 12, 2012. It was determined during the renewal review that Kolberg would be classified as a minor source.

### **1.1 Operational Description**

Kolberg is a manufacturing facility for rock crushers, conveyors, and associated construction/industrial equipment. Structural and plate steel is welded and painted at the facility. The Standard Industrial Classification code for this facility is 3531.

## 1.2 Requested Action

On May 23, 2012, Kolberg submitted an application to revise its permit by installing a forge furnace to replace the existing forge furnace and install a dual gantry bevel plasma cutting table and associated bag house to replace the existing “six-head cutting torch with a heat capacity of 0.3 million Btus per hour”. This unit was previously exempted in the previous Statement of Basis. The new plasma cutting table is rated at 0.6 million Btus per hour.

Kolberg proposes to install a 2012 Alltra/Hypertherm Bevel HPR400XD plasma burn table with particulate emissions controlled by a 2012 Donaldson Torit Model DFO 4-32 baghouse. Kolberg also proposes to install a 2012 Baker forge furnace rated at 2.2 million Btus per hour.

## 1.3 Existing Operations

The facility currently has permitted the following emission units as listed in its Minor air quality operating permit issued March 12, 2012:

**Table 1-1 Description of Permitted Units, Operations, and Processes**

<b>Unit</b>	<b>Description</b>	<b>Control Device</b>
<b>#1</b>	North Booth – 1992 Texaspray air assist – airless paint booth. The paint booth uses a manual method of spraying.	Dry filter pads will control overspray
<b>#2</b>	South Booth – 1977 Trimatic air assist – airless paint booth, model number TM-1888018-FLI. The paint booth uses a manual method of spraying.	Dry filter pads will control overspray
<b>#3</b>	Small Parts Booth – 1994 Custom paint booth. The paint booth uses an air assisted airless, manual method of spraying.	Dry filter pads will control overspray
<b>#4</b>	Small Parts Paint Booth air make-up unit – 1994 Hastings air make up unit, model SBD-277-40-4696, serial number 47754. The unit has a heat input capacity of 4.70 million Btus per hour and operates on natural gas.	Not Applicable
<b>#5</b>	2000 Logan Valley Paint Booth. The paint booth uses an air assisted airless, manual method of spraying.	Dry filter pads will control overspray
<b>#6</b>	Conveyor Booth - 2006 Diamond Vogel/Colmet paint booth, model number TDD-1818-100 DT. The paint booth will use an air assisted-airless, manual method of spraying.	Dry filter pads will control overspray
<b>#7</b>	Fast Track Booth - 2006 Diamond Vogel/Colmet paint booth, model number TOD-2218-80 DT. The paint booth will use an air assisted-airless, manual method of spraying.	Dry filter pads will control overspray
<b>#8</b>	Conveyor paint booth air make-up unit – The unit has a heat input capacity of 9.50 million Btus per hour and operates on natural gas.	Not Applicable

<b>Unit</b>	<b>Description</b>	<b>Control Device</b>
<b>#9</b>	Fast track paint booth air make-up unit – The unit has a heat input capacity of 9.72 million Btus per hour and operates on natural gas	Not Applicable
<b>#10</b>	ALLTRA Hi-Definition Burn Table HPR 260.	2004 Donaldson-Torit 24-bag baghouse
<b>#11</b>	ALLTRA Burn Table HPR 260.	2007 Farr GS-16 16-bag baghouse.
<b>#17</b>	Whitney 661-84 Plasma Punch.	1993 Donaldson-Torit TD-3-99 3-bag baghouse.
<b>#18</b>	Baker Stress Relief Furnace - The unit has a heat input capacity of 5.3 million Btus per hour and operates on natural gas.	Not Applicable

The previous Statement of Basis associated with the permit issued November 24, 2006, had exempted the following units:

- South paint booth air make-up unit – Hastings air make up unit, model LB-35C, serial number 6760. The unit has a heat input capacity of 3.0 million Btus per hour;
- North paint booth air make-up unit – 1987 King National, model DFOC 225B HBR, serial number 87-DF-3438. The unit has a heat input capacity of 3.9 million Btus per hour; but the potential emissions from the unit are less than two tons per year of hazardous air pollutants or any criteria pollutant;
- Middle paint booth air make-up unit – Hastings model SBDHT-277-45-4250, serial number 57383. The unit has a heat input capacity of 4.3 million Btus per hour; but the potential emissions from the unit are less than two tons per year of hazardous air pollutants or any criteria pollutant;
- Metal fabrication, treating, and coating;
- Six head cutting torch with a heat input capacity of 0.3 million Btus per hour;
- Heat treating furnace with a heat input capacity of 2.2 million Btus per hour;
- Welding area air handler with a heat input capacity of 1.7 million Btus per hour;
- Torrit baghouse for metal shot blasting booth – emits indoors;
- Lab – sieve analysis, baghouse with potential emissions of less than two tons per year;
- Space heating;
- Drying room furnace with a heat input capacity of 1.3 million Btus per hour;
- Small parts loading area furnace with a heat input capacity of 1.3 million Btus per hour;
- Electrical department furnace with a heat input capacity of 1.3 million Btus per hour; and
- 65 radiant heaters – collective heat input capacity 8.0 million Btus per hour (varying heat input capacities of not more than 0.1 million Btus per hour).
- Material Testing Laboratory baghouse. 36 bags. Unknown manufacturer & date.
- Hoffman Shotblast System. Compressed air shotblasting system with emissions controlled by a 1994 Donaldson-Torit 54-bag baghouse.

- Welding area. Emissions controlled by a 1990 Donaldson-Torit 4DF48 48 bag baghouse.
- Wheelabrator shotblast furnace. Natural gas fired furnace. Rated at 3 MMBtu/hr heat input.
- Wheelabrator shotblast system. Emissions from the shotblast system are controlled by a 2007 reverse air baghouse with 113 bags.

## **2.0 NEW SOURCE PERFORMANCE STANDARDS Part 60)**

### **2.1 New Source Performance Standards (40 CFR Part 60)**

DENR reviewed the New Source Performance Standards and determined that the proposed construction project is not applicable to any standards under 40 CFR Part 60.

## **3.0 NEW SOURCE REVIEW**

### **3.1 New Source Review**

ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. Kolberg is located in Yankton, South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, Kolberg is not subject to NSR review.

## **4.0 PREVENTION OF SIGNIFICANT DETERIORATION**

### **4.1 Prevention of Significant Deterioration**

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO<sub>2</sub>);
5. Nitrogen oxides (NO<sub>x</sub>);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;

9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the “Tailoring Rule.”

On May 13, 2010, EPA issued the final version of the “Tailoring Rule” for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

Kolberg does not meet the 250 tons per year threshold, is not one of the 28 named PSD source categories, and does not meet the major source threshold for greenhouse gases. Therefore, Kolberg is considered a minor source under the PSD program and is not subject to PSD requirements.

#### **4.2 Potential Emissions from Existing Sources**

In the statement of basis associated with the permit renewal issued March 12, 2012, DENR calculated the potential emissions from the permitted units in Table 1-1. Kolberg has been issued a construction permit to install a powder coating booth that replaced the Unit #3 paint booth. Units 1, 2, and 4 through 9 are the existing paint booths and natural gas fired air makeup units associated with the paint booths. The potential particulate matter (PM), particulate matter less than 10 microns (PM10), carbon monoxide (CO), volatile organic compound emissions (VOC), sulfur dioxide (SO2), nitrogen oxide (NOx), toluene, and total hazardous air pollutants (HAPs) emissions from these sources are shown in Table 4-1. As indicated, Table 4-1 does not include the emissions from Unit #3.

**Table 4-1 – Potential Emissions, Summary (tons per year)**

Unit #	PM	PM10	CO	VOC	SO2	NOx
Misc <sup>1</sup>	1.0	1.0	9.9	0.7	0.09	11.8
1, 2, 4-9	1.0	1.0	10.5	45.9	0.1	12.6
10	4.6	4.6	0.0	0.0	0.0	1.5
11	4.6	4.6	0.0	0.0	0.0	1.5
12	0.0	0.0	0.0	0.0	0.0	0.0
13	0.13	0.02	0.0	0.0	0.0	0.0
14	0.09	0.09	0.0	0.0	0.0	0.0
15	0.1	0.1	0.0	0.7	0.01	1.3
16	0.07	0.01	0.0	0.0	0.0	0.0
17	7.7	7.7	0.0	0.0	0.0	4.2
18	0.18	0.18	1.9	0.13	0.01	2.3
<b>Total =</b>	<b>20</b>	<b>19</b>	<b>22</b>	<b>47</b>	<b>0</b>	<b>35</b>

<sup>1</sup> Includes previously exempted fuel burning, welding and shot blasting units.

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturer data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

### 4.3 Fuel Burning Units

AP-42 emission factors for combustion units are based on the designed gross heat input rate of each unit. DENR will apply the emission factors for the industrial units for the new furnace. The particulate matter (PM), particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), carbon monoxide (CO), carbon dioxide (CO2), volatile organic compounds (VOC), sulfur dioxide (SO2), nitrogen oxide (NOx) emission factors for the natural gas combustion units are taken from AP-42, 5th Edition, Tables 1.4-1, -2, -3 & -4, 7/98.

**Table 4-2 – Fuel Burning Unit Emission Factors - pounds per million standard cubic feet**

PM	PM10/PM2.5	CO	VOC	SO2	NOx
7.6	5.7	84	5.5	0.6	100



These emission factors were converted to pounds per hour based on the unit's designed heat input capacity, an average natural gas heat content of 1,020 million Btus (MMBtus) per million cubic foot (MMcf), and Equation 5-1 below and are summarized in Table 4-3.

#### Equation 4-1 – Emission factor

$$\text{Emission factor} \left[ \frac{\text{pounds}}{\text{hour}} \right] = \text{input} \left[ \frac{\text{MMBtus}}{\text{hour}} \right] \div 1020 \frac{\text{MMBtus}}{\text{MMcf}} \times \text{AP42 Emission factor} \left[ \frac{\text{pounds}}{\text{MMcf}} \right]$$

**Table 4-3 – Fuel Burning Unit Emission Factors (pounds per hour)**

Unit #	Input Capacity (million Btu per hour)	PM	PM10 PM2.5	CO	VOC	SO2	NOx
Furnance	2.2	0.016	0.012	0.181	0.012	0.001	0.216

#### 4.4 Plasma Cutting Systems

Kolberg's application provided particulate matter testing data for the dual gantry bevel plasma cutting table. The application did not provide data for other criteria pollutant emissions. Associated with Kolberg's permit issued August 2009, Kolberg submitted fume emission testing data conducted by Hypotherm for plasma cutting tables. The study quantified emissions for particulate matter and nitrogen oxide. This study will be used to determine the emission factors for nitrogen oxide emissions. Table 5-4 summarizes the emission factors in pounds per hour.

**Table 4-4 - Plasma Cutting Emission Factors (pounds per hour)**

Unit	PM/PM10/PM2.5	NOx
2012 Hypertherm HPR400 Table	1.685	0.331

#### 4.5 Potential Emissions – Facility

Equation 4-2 and the emission factors from Tables 4-3 and 4-4 will be used to calculate the annual emissions.

#### Equation 4-2 – Potential emissions

$$\text{Potential Emissions} = \text{Emission Factor} \left[ \frac{\text{pounds}}{\text{hour}} \right] \times 8760 \frac{\text{hours}}{\text{year}} \times 1 \left[ \frac{\text{tons}}{2000 \text{ pounds}} \right]$$

Table 4-5 summarizes the annual particulate matter (PM), particulate matter less than 10 microns (PM10), carbon monoxide (CO), volatile organic compound emissions (VOC), sulfur dioxide (SO2), and nitrogen oxide (NOx) potential emissions for Kolberg considering both the existing operations and the new plasma table.

**Table 4-5 – Facility Potential Emissions**

Unit	PM/PM <sub>10</sub> /PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO
Existing Units #1,2,4 – 18 <sup>1</sup>	20	0	35	47	22
Unit #19 <sup>2</sup>	6	-	1.4	-	-
2012 Hypertherm HPR400 Table Furnace	7.4	-	1.4	-	-
	0.1	0.0	0.9	0.1	0.8
<b>Total<sup>3</sup></b>	<b>33</b>	<b>0</b>	<b>38</b>	<b>47</b>	<b>22</b>

<sup>1</sup>- The existing units include the miscellaneous operations (insignificant activities);

<sup>2</sup>-Unit #19 is included in Kolberg's 2012 construction permit. It was not operating at the time the renewal issued so it is not shown in Table 1.1; and

<sup>3</sup> – The new furnace emissions are not included in the total. The new furnace is replacing an existing furnace. The potential to emit of the existing furnace is included in the miscellaneous operations and are the same as the new furnace. Therefore, subtracting the existing furnace and adding the new furnace emissions would result in zero increase or decrease of emissions.

#### 4.6 Potential to Emit for Greenhouse Gases

Kolberg is considered an existing non-PSD source. The next step is to determine if Kolberg has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more.

There are six regulated greenhouse gases which are listed below:

1. Carbon dioxide;
2. Nitrous oxide;
3. Methane;
4. Hydrofluorocarbons;
5. Perfluorocarbons; and
6. Sulfur hexafluoride.

The emission information for the plasma table does not indicate any greenhouse emissions are generated. The new furnace is replacing an existing furnace. The potential to emit of the existing furnace is included in the miscellaneous operations and are the same as the new furnace. Therefore, subtracting the existing furnace and adding the new furnace emissions would result in zero increase or decrease of emissions. Therefore, the potential carbon dioxide equivalent emissions would be the same as previously estimated. In the statement of basis associated with the permit renewal issued March 12, 2012, the potential carbon dioxide emissions were approximately 29,000 tons per year.

Kolberg is considered an existing non-PSD source with the potential to emit less than 100,000 tons per year of carbon dioxide equivalent emissions. Therefore, Kolberg is considered a minor source for greenhouse gases under the PSD program and proposed changes will not change this status.

## 5.0 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (PART 61)

### 5.1 National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

DENR reviewed the national emission standards for hazardous standards and determined the proposed construction project is not applicable to any standards under 40 CFR Part 61.

## 6.0 MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY STANDARDS (PART 63)

### 6.1 Potential HAP Emissions

The federal Maximum Achievable Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of hazardous air pollutants is defined as having the potential to emit 10 tons or more per year of a single hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

In the statement of basis associated with the permit renewal issued March 12, 2012 the calculated potential hazardous air pollutant emissions from the permitted units in Table 1-1 are shown in Table 6-1.

**Table 6-1 – Potential Hazardous Air Pollutant Emissions (tons per year)**

Unit	Xylene <sub>1</sub>	Total HAPs
#1-#3 and #5-#9	2.4	3.3
#4	0.0	0.0
#10	0.0	0.1
#11	0.0	0.1
#12	0.0	0.0
#13	0.0	0.0
#14	0.0	0.0
#15	0.0	0.0
#16	0.0	0.0
#17	0.0	0.1
#18	0.0	0.0
<b>Total =</b>	<b>2</b>	<b>4</b>

<sup>1</sup> - Xylene is the greatest single HAP emitted from the facility.

Kolberg's application did not provide data for hazardous air pollutants for the new plasma table or the furnace. Associated with Kolberg's permit issued August 2009, Kolberg submitted fume

emission testing data conducted by Hypotherm for plasma cutting tables. The study quantified emissions for hazardous air pollutants. This study will be used to determine the emission factors for hazardous air pollutants. The emission factor for total hazardous air pollutant is 0.0193 pounds per hour. Equation 3-1 and the total hazardous air pollutant emission factor will be used to calculate the annual emissions. The potential emissions from the new plasma cutting system and existing operations are summarized in Table 6-2.

**Table 6-2 – Potential Hazardous Air Pollutant Emissions with Plasma Cutting System**

Unit	Xylene <sub>1</sub>	Total HAPs
Existing Equipment	2.0	4.0
New Plasma Cutting System	0.0	0.1
<b>Total =</b>	<b>2</b>	<b>4</b>

<sup>1</sup> - Xylene is the greatest single HAP emitted from the facility.

Kolberg is considered an area source of hazardous air pollutant emissions based on its potential hazardous air pollutant emissions. DENR reviewed the Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63 and determined the following need to be reviewed further to determine if they are applicable.

## **6.2 National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63)**

DENR reviewed the Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63 and determined the following need to be reviewed further to determine if they are applicable.

### **6.2.1 ARSD 74:36:08:119 – 40 CFR Part 63, Subpart XXXXXX**

DENR reviewed the national emission standards and determined that the plasma cutting table may be applicable to 40 CFR Part 63, Subpart XXXXXX. The MACT standard is for the control of HAPs for nine metal fabrication and finishing area source categories. An area source has the potential to emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. The provisions of this subpart are applicable to an area source that is primarily engaged in the operations in one of the following nine source categories:

1. Electrical and Electronic Equipment Finishing Operations (NAICS codes 335999 and 335312);
2. Fabricated Metal Products (NAICS codes 332117 and 332999);
3. Fabricated Plate Work (Boiler Shops) (NAICS codes 332313, 332410, and 332420);
4. Fabricated Structural Metal Manufacturing (NAICS code 332312);
5. Heating Equipment, except Electric ((NAICS code 333414);
6. Industrial Machinery and Equipment Finishing Operations (NAICS codes 333120, 333132 and 333911);
7. Iron and Steel Forging (NAICS code 33211);
8. Primary Metal products Manufacturing (NAICS code 332618); and
9. Valves and Pipe Fittings (NAICS code 332919).

Kolberg has a Standard Industrial Classification Code of 3531 and a North American Industry Classification System code of 333120. Kolberg is one of the nine operations applicable to this subpart.

This subpart applies to sources using abrasive blasting, machining operations, dry grinding/dry polishing, spray painting, and welding activities.

This subpart regulates the emissions of metal fabrication or finishing metal HAPs – these operations are conducted prior to and are not associated with the operation of the plasma cutting table. Although applicable to the facility, this subpart is not applicable to the plasma cutting table.

## **7.0 STATE REQUIREMENTS**

### **7.1 State Requirements**

Any source operating in South Dakota that meets the requirements of the ARSD 74:36:04 are required to obtain a minor air quality permit. A minor permit is required if a source has the potential to emit more than 25 tons but less than 100 tons of a criteria pollutant. Kolberg does have the potential to emit more than 25 tons of a criteria pollutant.

As determined in a previous Statement of Basis, Kolberg meets the definition of a minor source. Therefore, Kolberg is required to submit an application to include the plasma burn table to its Minor air quality operating permit.

#### **7.1.1 State Emission Limits**

In accordance with ARSD 74:36:06:01, any unit required to be permitted must comply with the states' particulate matter and sulfur dioxide standards and requirements. Permitted units are also subject to the state opacity limit. The units that had been determined to be insignificant activities are still considered to be in that category.

#### **7.1.2 Allowable Emissions**

The total suspended particulate and sulfur dioxide emission limit for fuel burning units were derived from ARSD 74:36:06:02. A fuel burning unit with heat input values less than 10 million Btus per hour may not exceed 0.6 pounds of particulate matter per million Btus of heat input.

#### **7.1.3 Particulate Matter**

In accordance with ARSD 74:36:06:03(01)(a), the allowable particulate emission rate for process industry units with process weight rates up to 60,000 pounds per hour shall be determined by equation 7-1:

**Equation 7-1 – State’s particulate emission limit**

$$E=4.10 \times P^{0.67}$$

Where: E= the rate of emissions in pounds per hour; and

P= process weight rate in tons per hour

To determine the process weight rate, Kolberg supplied the annual tonnage of steel purchased in 2011 that was processed on the two similar plasma cutting tables and the actual hours of operation for the two tables. In 2011, Kolberg purchased 1,122 tons of steel and operated the two torches 2,313 hours. Kolberg processed an average of 0.49 tons per hour of steel on the plasma tables.

Table 7-1 compares Kolberg’s potential particulate emissions to the state’s particulate emission limit.

***Table 7-1 - Comparison of Allowable and Uncontrolled Particulate Emissions***

<b>Unit</b>	<b>Process Weight Rate (tons per hour)</b>	<b>Allowable Particulate Emission Rate (lbs/hr)</b>	<b>Uncontrolled Particulate Emission Rate (lbs/hr)</b>
2012 HPR 400 XD Plasma Unit	0.49	2.5	1.69

In addition to the total suspended particulate matter, permitted units are also required to meet an opacity limit of 20 percent in accordance with ARSD 74:36:12:01.

#### **7.1.4 Visibility Limits**

Visible emissions are applicable to units that discharge into the ambient air. In accordance with ARSD 74:36:12:01 a facility may not discharge into the ambient air more than 20 percent opacity for all units. Kolberg must control the opacity at less than 20 percent for all units.

#### **7.1.5 Performance Tests**

ARSD 74:36:06:06 states that stack testing may be required for units with potential emissions greater than 100 tons per year of a regulated pollutant or at the discretion of the Secretary. Kolberg will not be required to conduct a stack performance test or fuel analysis at this time. The current permit contains language that allows DENR to require a stack performance test or fuel analysis during the term of the permit if an investigation of the facility warrants it.

## **8.0 RECOMMENDATION**

Based on the information submitted in the air quality permit construction application, Kolberg Pioneer is required to obtain a construction permit for the installation of the 2012 Alltra/Hypertherm HPR400XD plasma burn table and the 2012 Donaldson – Torit Model DFO 4-32 baghouse. The new furnace's potential emissions are less than 2 tons per year. Therefore, the furnace is considered an insignificant activity and is not required to be included in a permit.

Questions regarding this permit review should be directed to Keith Gestring, Natural Resources Engineer.